

Application No. 09/954,947
Attorney Docket No. 34-UL-120827 (13322US01)

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. (Currently amended) An ultrasonic probe for obtaining ultrasound information of a region of interest (ROI), the probe comprising:
a housing having a central scan plane and an acoustic window portion
wherein said window portion allows ultrasound beams and echoes to pass through said housing;
a transducer array pivotally mounted within the housing, the transducer array being pivotal around a rotation axis, the transducer array capable of sweeping through the central scan plane parallel to a longitudinal axis of the probe,
wherein said window portion defines a range of transducer array motion; and
a control member pivoting the transducer array about the rotation axis with respect to the central scan plane, the transducer array being configured to transmit and receive ultrasound signals to and from an oblique scan plane oriented at an angle with respect to the central scan plane.
2. (Original) The ultrasonic probe of claim 1, wherein the control member comprises a stepper motor disposed in the housing.

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3. (Currently amended) An ultrasonic probe for obtaining ultrasound information of a region of interest (ROI), the probe comprising:

a housing having a central scan plane;

a transducer array pivotally mounted within the housing, the transducer array being pivotal around a rotation axis,

wherein said transducer array is connected to a drive shaft;

a control member pivoting the transducer array about the rotation axis with respect to the central scan plane, the transducer array being configured to transmit and receive ultrasound signals to and from an oblique scan plane oriented at an angle with respect to the central scan plane[[:]],

wherein the control member comprises a stepper motor disposed in the housing;

and

comprising a gear connected to said drive shaft; and

a belt, wherein the belt couples the gear to the stepper motor.

4. (Currently amended) An ultrasonic probe for obtaining ultrasound information of a region of interest (ROI), the probe comprising:

a housing having a central scan plane;

a transducer array pivotally mounted within the housing, the transducer array being pivotal around a rotation axis; and

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a control member pivoting the transducer array about the rotation axis with respect to the central scan plane, the transducer array being configured to transmit and receive ultrasound signals to and from an oblique scan plane oriented at an angle with respect to the central scan plane; and,

wherein the control member comprises a handcrank.

5. (Original) The ultrasonic probe of claim 1, further comprising a position sensing device for sensing an angular position of the transducer array with respect to a reference angle.

6. (Original) The ultrasonic probe of claim 1, further comprising an optical sensing device for sensing an angular position of the transducer array with respect to a reference angle.

7. (Original) The ultrasonic probe of claim 1, further comprising a centering device determining when the transducer array is aligned with the central scan plane.

8. (Original) The ultrasonic probe of claim 7, wherein the centering device is a magnetic sensing device.

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9. (Original) The ultrasonic probe of claim 1, wherein the probe is configured to obtain 3D volumes of scan planes.
10. (Original) The ultrasonic probe of claim 1, further comprising a button directing the control member to rotate the transducer array a predetermined number of degrees each time the button is pressed.
11. (Original) The ultrasonic probe of claim 1, further comprising a button directing the control member to rotate the transducer array to a predetermined position relative to the central scan plane.
12. (Original) The ultrasonic probe of claim 1, wherein the probe is one of a rectal probe, an endovaginal probe, a small part probe producing a sector-shaped scan plane, and a small linear probe producing a rectangular-shaped scan plane.
13. (Currently amended) An ultrasonic probe for obtaining ultrasound information of a region of interest (ROI), the probe comprising:
a housing having a central scan plane and an acoustic window portion,
wherein said window portion allows ultrasound beams and echoes to pass through
said housing;

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a transducer array pivotally mounted within the housing, the transducer array being pivotal around a rotation axis, the transducer array capable of sweeping through a central scan plane parallel to a longitudinal axis of the probe,

wherein said window portion defines a entire range of transducer array motion;

and

a motor pivoting the transducer array about the rotation axis with respect to the central scan plane, the transducer array being configured to transmit and receive ultrasound signals to and from an oblique scan plane oriented at an angle with respect to the central scan plane.

14. (Original) The ultrasonic probe of claim 13, wherein the probe is one of a rectal probe, an endovaginal probe, a small part probe producing a sector-shaped scan plane, and a small linear probe producing a rectangular-shaped scan plane.

15. (Original) The ultrasonic probe of claim 13, wherein the motor is a stepper motor disposed in the housing.

16. (Currently amended) An ultrasonic probe for obtaining ultrasound information of a region of interest (ROI), the probe comprising:

a housing having a central scan plane;

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a transducer array pivotally mounted within the housing, the transducer array being pivotal around a rotation axis,

wherein said transducer array is connected to a drive shaft; and

a motor pivoting the transducer array about the rotation axis with respect to the central scan plane, the transducer array being configured to transmit and receive ultrasound signals to and from an oblique scan plane oriented at an angle with respect to the central scan plane[[]],

wherein the motor is a stepper motor disposed in the housing; and

~~comprising~~ a gear[[]] attached to the transducer array[[]]; and

a belt, wherein the belt couples the gear to the stepper motor,

wherein said gear is connected to said drive shaft.

17. (Original) The ultrasonic probe of claim 13, further comprising a position sensing device for sensing an angular position of the transducer array with respect to a reference angle.

18. (Original) The ultrasonic probe of claim 13, further comprising an optical sensing device for sensing an angular position of the transducer array with respect to a reference angle.

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19. (Original) The ultrasonic probe of claim 13, further comprising a centering device for determining when the transducer array is aligned with the central scan plane.

20. (Original) The ultrasonic probe of claim 19, wherein the centering device is magnetic sensor device.

21. (Currently amended) A method for obtaining 2D images of a region of interest (ROI), the method comprising the steps of:

providing a housing having a central scan plane and an acoustic window portion, wherein said window portion allows ultrasound beams and echoes to pass through said housing;

mounting a transducer array pivotally within the housing, the transducer array being pivotal around a rotation axis, the transducer array capable of sweeping through a central scan plane parallel to a longitudinal axis of the housing,

wherein said transducer array pivots around said rotation axis across a range of transducer array motion defined by said window portion; and

pivoting the transducer array around the rotation axis with respect to the central scan plane, the transducer array being configured to transmit and receive ultrasound signals to and from an oblique scan plane oriented at an angle with respect to the central scan plane.

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22. (Original) The method of claim 21, and comprising the step of providing a stepper motor disposed in the housing.

23. (Currently amended) A method for obtaining 2D images of a region of interest (ROI), the method comprising the steps of:

providing a housing having a central scan plane;

mounting a transducer array for pivotal motion around a rotation axis,

wherein said transducer is mounted on a drive shaft; and

pivoting the transducer array around the rotation axis with respect to the central scan plane, the transducer array being configured to transmit and receive ultrasound signals to and from an oblique scan plane oriented at an angle with respect to the central scan plane;

~~comprising the step of~~ providing a stepper motor disposed in the housing; and

~~comprising the step of~~ providing a gear and a belt, wherein the belt couples the gear to the stepper motor,

wherein said gear is connected to said drive shaft.

24. (Currently amended) A method for obtaining 2D images of a region of interest (ROI), the method comprising the steps of:

providing a housing having a central scan plane;

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mounting a transducer array for pivotal motion around a rotation axis; and
pivoting the transducer array around the rotation axis with respect to the central scan plane, the transducer array being configured to transmit and receive ultrasound signals to and from an oblique scan plane oriented at an angle with respect to the central scan plane; and

~~further comprising the step of providing a handcrank.~~

25. (Original) The method of claim 21, further comprising the step of providing a position sensing device for sensing an angular position of the transducer array with respect to a reference angle.

26. (Original) The method of claim 21, further comprising the step of providing an optical sensing device for sensing an angular position of the transducer array with respect to a reference angle.

27. (Original) The method of claim 21, further comprising the step of providing a centering device determining when the transducer array is aligned with the central scan plane.

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28. (Previously presented) The method of claim 27, wherein the step of providing a centering device comprises providing a magnetic sensing device determining when the transducer array is aligned with the central scan plan.
29. (Previously presented) The method of claim 21, further comprising the step of configuring the transducer array to obtain 3D volumes of scan planes.
30. (Original) The method of claim 21, further comprising the step of providing a button for rotating the transducer array a predetermined number of degrees each time the button is pressed.
31. (Original) The method of claim 21 and comprising the step of providing a button for rotating the transducer array to a predetermined position relative to the central plane.
32. (Previously presented) The method of claim 21 wherein the transducer array is located in at least one of a rectal probe, an endovaginal probe, a small part probe producing a sector-shaped scan plane, and a small linear probe producing a rectangular-shaped scan plane.